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EXAMINER
ALLISON, ANDRAE S

ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Application No.</td><td>Applicant(s)</td></tr>
<tr><td>10/692,999</td><td>RICE ET AL.</td></tr>
<tr><td></td><td>Examiner</td><td>Art Unit</td></tr>
<tr><td></td><td>Andrae S. Allison</td><td>2624</td></tr>
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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after t he mailing date of this communication, even if timely filed, may re duce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Amendment*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-19* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-19* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks

The Office Action has been issued in response to amendment filed January 19, 2007. Claims 1-19 are pending. Applicant's arguments have been carefully and respectfully considered in light of the instant amendment, and are not persuasive. Accordingly, this action has been made FINAL.

Specification Objection

The specification has been has been amended to remove a hyperlink and corrected the misspelled word "spot". Therefore the objection has been removed.

Response to Rejection Arguments

In response to applicant arguments on page 8-9, [p][2-4] that the references failed to teach or show comparing the identified movement in the selected critical area with a database associates movements in selected areas with specific physical condition, the Examiner disagrees with Applicant. Pantic clearly teaches comparing the identified movement in the selected critical area with a database associates movements in selected areas (specific facial actions; page 881, [p][3], line 10) with specific physical condition (physiological reaction, page 881, [p][3], line 13). The physiological reaction

reactions give insights as to a person physical condition, for example, if someone is sweating, this could be an indication that the person has a fever or very hot.

Applicant has also argued that the Vining reference lacks motivation (see page 9-10, [p][5-9]) and the Examiner applied improper hindsight to combine the teachings of Vining, Black and Pantic to meet the limitation generating a report of the emotional and physical condition of the subject, the Examiner disagrees. Note that both Pantic and Black produces an output as to the condition of an individual (see Fig 9, of Black and see Fig 8 of Pantic), however, neither implicitly outputs produces a "report". Vining's reference is directed a method of reporting findings (column 2, line 11-12) of an expert analysis of image data that includes the step of generating a report (column 3, line 37-38). Therefore, Vining's reference would cure the deficiencies of Black and Pantic by producing a formal report as to the emotional and physical conditions of an individual. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that on page 11, [p][9] that the references fail to teach the method, wherein the step of recording frame-to-frame changes in critical areas of interest includes recording changes in spot area, the Examiner disagrees.

Black teaches a method wherein the step of recording frame-to-frame changes in critical

areas of interest includes recording changes in spot area (see column 9, line 33-43

where motion of spot area such as brow regions 45, see Fig 2, are recovered and

stored in memory 20).

In response to applicant's argument on page 11 [p][10] that the references fails to

teach a database, that associates groups of facial movements with specific emotional

and physical conditions of the subject; a database analysis module, for comparing the

identified movements in the selected critical areas with the database; and a report

generator, for generating a report of the emotional and physical condition of the subject.

Black clearly teaches a database analysis module (26, feature and gesture recognition

detector; see Fig 1) for comparing the identified movements in the selected critical

areas with the database and Vining teaches a system for reporting findings (column 2,

line 11-12) of an expert analysis of image data that includes a report generator (10,

reporting system, see Fig 2) for generating a report of the emotional and physical

condition of the subject. As to arguments for lack of motivation and improper hindsight

reasoning, note the discussion above.

In response to applicant's argument on page 11, [p][11], that the references fail

to teach the means for recording frame-to-frame changes in the critical areas includes

means for recording changes in area, the Examiner disagrees. Black clearly teaches

where motion of spot area such as brow regions 45, see Fig 2, are recovered and

stored in memory 20, column 9, line 33-43.

In response to applicant's argument on pages 12, [p][13-14], that Lee's reference

fail to teach the step of recording frame-to-frame changes in critical areas of interest

includes recording changes in axial distance, to facilitate detection of axial pulsing

movements, the Examiner disagrees. Neither Black, Pantic nor Vining teach a method

wherein the step of recording frame-to-frame changes in critical areas of interest

includes recording changes in axial distance to facilitate detection of axial pulsing

movements. Therefore the Examiner added Lee's references to cure the deficiencies of

the reference. Lee teaches a method of obtaining iris images (column 4, line 61)

including the step of recording changes in axial distance (measuring the distance

between a user's face and a camera; column 8, line 10-11) to facilitate detection of axial

pulsing movements. Applicant specifically argued that Lee teaches detecting the

movement of the entire head and not the axial pulsing distance. Examiner disagrees

because the axial pulsing distance can be broadly interpreted as the distance between

an individual's head a camera.

In response to applicant's argument on pages 12-13, [p][15] and page that the

references fail to teach, the optical imaging device includes means for measuring axial

distance to a critical area of the face; and the means for recording frame-to-frame

changes in critical area positions includes means for recording changes in axial

distance, to facilitate detection of axial pulsing movements in a critical area, the

Examiner disagrees. Note the discussion above and Lee teaches an apparatus for

obtaining iris images (column 4, line 61) including means for measuring axial distance to

a critical area of the face (703, distance measurer; Fig 12) and the means for recording

frame-to-frame changes in critical area positions includes the means for recording

changes in axial distance (703, distance measurer; Fig 12), to facilitate detection of

axial pulsing movements in a critical area.

In response to applicant's argument on pages 13, [p][15-16] that the Yamamoto

reference fails cure the deficiencies of Black, Pantic and Vinning by failing to teach

wherein the optical imaging device comprises a charged-coupled device (CCD) camera

producing a two-dimensional image, the Examiner disagrees. Yamamoto clearly

teaches a face-image processing apparatus (column 3, line 25) that comprises a

charged-coupled device (CCD) camera (see Fig. 2) producing a two-dimensional image,

and therefore cures the deficiencies of Black, Pantic and Vining.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-3, 5, 6, 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Black et al (US Patent No.: 5,774, 591) in view of Pantic (NPL

document titled "Expert system for automatic analysis of facial expression") further in

view of Vining et al (US Patent No.: 6,785,410).

As to claim 1, Black discloses a method for sensing selected emotions (e.g. happiness; column 10, line 64) in a human subject (human face; column 4, line 26). Black teaches generating an image of substantially all of the face of a human subject (40, Fig 2). Black also teaches processing the image to identify movements (determine image motion, column 7, line 34) in selected critical areas of the face (e.g. eye regions; column 7, line 35). Black also teaches comparing the identified movements in the selected critical areas with a database (temporal models stored on memory 28, see Fig1) that associates movements in selected critical areas with specific emotional (e.g. anger expression can be characterized by an initial flattening of the lip followed by a long downward curvature, followed by the mouth going back to a relax position; column 20, lines 36-40) and physical conditions.

However, Black does not teach associating movement in critical areas with physical conditions. Pantic teaches a method of analyzing non-verbal communication (page 881, [p][3], lines 4-5). Pantic also teaches associating movement in critical areas (specific facial actions; page 881, [p][3], line 10) with physical conditions (physiological reaction, page 881, [p][3], line 13). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added the method of analyzing non-verbal communication of Pantic to the method of recognizing facial expression of Black for vision based gesture analysis which includes face action recognition and emotional classification of facial expressions (page 903, [p][3], lines 2-5).

Note the discussion above, both Black and Pantic does not teach generating a

report of the emotional and physical condition of the subject. Vining teaches a method

of reporting findings (column 2, line 11-12) of an expert analysis of image data that

includes the step of generating a report (column 3, line 37-38) of the emotional and

physical condition of the subject. Therefore it would have been obvious to one of

ordinary skill in the art at the time the invention was made to have added the method of

reporting findings of Vining to the method of recognizing facial expression of Black as

modified by Pantic for creating a report from a database of expert findings so that "data

mining and other analysis may be conducted" (column 3, lines 39-46).

As to claim 2, Black teaches wherein the processing step comprises

inputting a two-dimensional frame of the image (column 7, line 47). Black teaches

scanning the image to locate the subject's face and determine it's relative position and

extent (column 7, line 59). Black also teaches scanning the facial part of the image to

detect the selected critical areas (column 7, line 59). Black further teaches repeating the

preceding steps for a sequence of image frames (column 8, lines 41-45). Additionally,

Black teaches recording frame-to-frame changes (recover motion parameters; column

8, line 56) in critical areas of interest. Black further teaches recording frame-to-frame

changes in critical area positions for purposes of tracking the positions while permitting

limited movement of the subject (column 8, lines 59-60).

As to claim 3, Black teaches a method wherein the step of recording frame-to-

frame changes in critical areas of interest includes recording changes in spot area (see

column 9, line 33-43 where motion of spot area such as brow regions 45, see Fig 2, are

recovered and stored in memory 20).

As to claim 5, note the discussion above, Pantic teaches wherein the comparing

step makes use of a database that uses the facial action coding system (FACS) (page

901, [p][1] lines 6-7).

As to claim 6, Black teaches an apparatus for sensing selected emotions (facial

gesture and recognition system; column 6, line 68 and column 7, line 1) in a human

subject. Black also teaches optical imaging device (see column 7, line 44 where image

acquisition system 8, see Fig 1, includes a camera) for generating an image of

substantially all of the face of a human subject. Black further teaches an image

processing module (16, see Fig 1) for processing the image to identify movements in

selected critical areas of the face; a database (temporal models are stored in memory

28) associates groups of facial movements with specific emotional (e.g. anger

expression can be characterized by an initial flattening of the lip followed by a long

downward curvature, followed by the mouth going back to a relax position; column 20,

lines 36-40) and physical conditions of the subject;

However, Black does not teach associating movement in critical areas with

physical conditions. Pantic teaches a system for analyzing non-verbal communication

(page 881, [p][3], lines 4-5). Pantic also teaches associating movement in critical areas

(specific facial actions; page 881, [p][3], line 10) with physical conditions (physiological

reaction, page 881, [p][3], line 13). Therefore it would have been obvious to one of

ordinary skill in the art at the time the invention was made to have added the system of

analyzing non-verbal communication of Pantic to the facial gesture and gesture

recognition system of Black for vision based gesture analysis which includes face action

recognition and emotional classification of facial expressions (page 903, [p][3], lines 2-

5).

Black further teaches a database analysis module (26, feature and gesture

recognition detector; see Fig 1) for comparing the identified movements in the selected

critical areas with the database.

Note the discussion both Black and Pantic does not teach a report generator, for

generating a report of the emotional and physical condition of the subject. Vining

teaches a system for reporting findings (column 2, line 11-12) of an expert analysis of

image data that includes a report generator (10, reporting system, see Fig 2) for

generating a report of the emotional and physical condition of the subject. Therefore it

would have been obvious to one of ordinary skill in the art at the time the invention was

made to have added the system for reporting findings of Vining to the recognizing facial

expression system of Black as modified by Pantic for creating a report from a database

of expert findings so that "data mining and other analysis may be conducted" (column 3,

lines 39-46).

As to claim 8, Black teaches wherein the image processing modules comprises:

the means for inputting a two-dimensional frame of the image is image acquisition

system 8, see Fig 1.

the means for scanning the image to locate the subject's face and determine it's relative

position and extent is image segmentation 12, see Fig1.

the means for scanning the facial part of the image to detect the critical areas of interest

is image segmentation 12, see Fig1.

the means for repeating the preceding steps for a sequence of image frames is motion

estimation system 16, see Fig1.

the means for recording frame-to-frame changes in the critical areas of interest is

motion estimation system 16, see Fig1.

the means for recording frame-to-frame changes in critical area positions, for purposes

of tracking the positions while permitting limited movement of the subject is region

tracking system, 18, see Fig 1.

As to claim 9, Black teaches an apparatus wherein the means for recording

frame-to-frame changes in the critical areas includes means for recording changes in

area (see column 9, line 33-43 where motion of spot area such as brow regions 45, see

Fig 2, are recovered and stored in memory 20).

As to claim 11, note the discussion above, Pantic teaches wherein the database uses

the facial action coding system (FACS) (page 901, [p][1] lines 6-7).

3.   Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Black et al (US Patent No.: 5,774, 591) in view of Pantic (NPL document titled "Expert

system for automatic analysis of facial expression") further in view of Vining et al (US

Patent No.: 6,785,410) further in view of Lee et al (US Patent No. 7,095,901).

As to claim 4, neither Black, Pantic nor Vining teach a method wherein the step

of recording frame-to-frame changes in critical areas of interest includes recording

changes in axial distance to facilitate detection of axial pulsing movements. Lee teaches

a method of obtaining iris images (column 4, line 61) including the step of recording

changes in axial distance (measuring the distance between a user's face and a camera;

column 8, line 10-11) to facilitate detection of axial pulsing movements. Therefore it

would have been obvious to one of ordinary skill in the art at the time the invention was

made to have added the method of obtaining iris images of Lee to the method of

recognizing facial expression of Black as modified by Pantic and Vining for measuring

the distance between a user and a "camera more accurately, more conveniently and

more quickly and to focus the camera automatically" (column 4, lines 2-4).

As to claim 10, neither Black, Pantic nor Vining teach an apparatus wherein the

optical imaging device includes means for measuring axial distance to a critical area of

the face; and the means for recording frame-to-frame changes in critical area positions

includes means for recording changes in axial distance, to facilitate detection of axial

pulsing movements in a critical area. Lee teaches an apparatus for obtaining iris

images (column 4, line 61) including means for measuring axial distance to a critical

area of the face (703, distance measurer; Fig 12) and the means for recording frame-to-

frame changes in critical area positions includes the means for recording changes in

axial distance (703, distance measurer; Fig 12)`, to facilitate detection of axial pulsing

movements in a critical area. Therefore it would have been obvious to one of ordinary

skill in the art at the time the invention was made to have added the apparatus for

obtaining iris images of Lee to the facial gesture and gesture recognition system of

Black as modified by Pantic and Vining for measuring the distance between a user and

a "camera more accurately, more conveniently and more quickly and to focus the

camera automatically" (column 4, lines 2-4).

4.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black et

al (US Patent No.: 5,774, 591) in view of Pantic (NPL document titled "Expert system for

automatic analysis of facial expression") further in view of Vining et al (US Patent No.:

6,785,410) further in view of Yamamoto (US Patent No.: 6,549,664).

As to claim 7, note the discussion, neither Black, Pantic nor Vining teach an

apparatus wherein the optical imaging device comprises a charged-coupled device

(CCD) camera producing a two-dimensional image. Yamamoto teaches a face-image

processing apparatus (column 3, line 25) that comprises a charged-coupled device

(CCD) camera (see Fig. 2) producing a two-dimensional image. Therefore it would have

been obvious to one of ordinary skill in the art at the time the invention was made to

have substituted the optical image device of Black as modified by Pantic and Vining with

the face-image processing apparatus of Yamamoto for photographing of a person's face

used for extracting a certain characteristic such as an eye or nostril (column 3, lines 29-

35).

Rejections for New Claims

Claims 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Black et al (US Patent No.: 5,774, 591) in view of Pantic (NPL document titled "Expert

system for automatic analysis of facial expression") further in view of Vining et al (US

Patent No.: 6,785,410) further in view of Stirbl et al (US Patent No.: 5,507,291).

As to claim 12, note the discussion above, neither Black, Pantic or Vining

discloses the method wherein generating the image comprises implementing electronic

speckle pattern interferometry to generate a speckle pattern of diffusely reflected

coincident light that corresponds to the face of the human subject. Stirbl teaches a

method for for remotely determining an individual emotional (column 1, lines 8-10) state

that includes generating the image comprises implementing electronic speckle pattern

interferometry to generate a speckle pattern of diffusely reflected coincident light that

corresponds to the face of the human subject (note that the method can determine the

physical or physiological parameter from the iris (see abstract), thus a speckle pattern of

the face can be obtained). At the time of the invention, it would have been obvious to a

person of ordinary skill in the art to have combined the teachings of Stirbl with that of

Black as modified by Pantic and Vining for obtaining information pertinent to a person's emotional state, without the person's knowledge, thereby determining the truthfulness or sincerity of a person during an interview (column 1, lines 42-58).

As to claim 13, note the discussion above, Stirbl teaches the method wherein processing the images comprises identifying fluctuations in multiple-pixel reflectivity of the speckle-spot pattern compared with non-vibratory areas of adjacent facial surfaces to identify the selected critical areas of the face (see column 6, lines 45-50).

As to claim 14, note the discussion above, Stirbl teaches the method wherein processing the image comprises tracking the recording frame-to-frame changes in at least one of position, size and intensity of speckle-spots in the selected critical areas of the speckle-spot pattern (note that changes in selected target point of an individual can be tracked, see column 56-56).

As to claim 15, note the discussion above, Stirbl teaches the method wherein generating comprises: obtaining a first image of substantially all of the face of the human subject at a beginning of a pulse period associated with a pulsed light source; obtaining a second image of substantially all of the face of the human subject at a beginning of a pulse period associated with a pulsed light source (166, see Fig 5, note that the light source is modulated); and subtracting the second image from the first image to generate a resulting image of substantially all of the face of the human

subjects having a high contrast ratio (see column change in intensity is determined, see
column 2, lines 56-67).

Claim 16 differ from claim 12 only in that claim 12 is a method claim whereas,
claim 16 is an apparatus claim. Thus, claim 16 is analyzed as previously discussed with
respect to claim 12 above.

Claim 17 differ from claim 13 only in that claim 13 is a method claim whereas,
claim 17 is an apparatus claim. Thus, claim 17 is analyzed as previously discussed with
respect to claim 13 above.

Claim 18 differ from claim 14 only in that claim 14 is a method claim whereas,
claim 18 is an apparatus claim. Thus, claim 18 is analyzed as previously discussed with
respect to claim 14 above.

Claim 19 differ from claim 15 only in that claim 15 is a method claim whereas,
claim 19 is an apparatus claim. Thus, claim 19 is analyzed as previously discussed with
respect to claim 15 above.

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Inquires

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Andrae S. Allison whose telephone number is (571)

270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am - 5:00

pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrae Allison

March 2, 2007

A.A.

JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER